



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,054	08/29/2005	Deliang Zhang	3392-00013	3959
26753 7590 01/15/2008 ANDRUS, SCEALES, STARKE & SAWALL, LLP 100 EAST WISCONSIN AVENUE, SUITE 1100 MILWAUKEE, WI 53202			EXAMINER ZHU, WEIPING	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 01/15/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,054	Applicant(s) ZHANG ET AL.	
	Examiner Weiping Zhu	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2008.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-46 is/are pending in the application.
 4a) Of the above claim(s) 45 and 46 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 26-44 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicants' election without traverse of Invention I, claims 26-44 in the reply filed on November 1, 2007 is acknowledged. The non-elected Invention II, claims 45 and 46, has been withdrawn by the applicants in the same reply.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 26, 30-33 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagle et al. (US 4,921,531).

With respect to claim 26, Nagle et al. ('531) discloses a method of separating component from a metal based composite comprising heating the metal based composite, crushing the metal based composite and separating the component (col. 10, lines 3-17 and col. 15, lines 5-14). Nagle et al. ('531) does not disclose that the size of the component within the metal based composite is increased by the heating. However, the instant claim 26 does not limit the size of the component before the heating. The examiner's interpretation is that the size of the component before the heating could be any sizes smaller than the sizes of the component after the heating, including the size of zero. The heating of Nagle et al. ('531) initiates a component forming reaction involving

in situ precipitation and growth of the component within the metal based composite (col. 10, lines 3-17). Therefore, the heating of Nagle et al. ('531) inherently leads to the increase of the size of the component.

With respect to claims 30 and 31, Nagle et al. ('531) discloses that the metal in the metal based composite comprises titanium (col. 9, lines 11-19).

With respect to claims 32 and 33, Nagle et al. ('531) discloses that the metal based composite is a combination of a metallic phase and a ceramic material (col. 10, lines 7-10).

With respect to claim 41, Nagle et al. ('531) discloses that the separation of the component is achieved by sedimentation (col. 7, lines 4-7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 27-29, 34-40 and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagle et al. (US 4,921,531).

With respect to claims 27 and 28, Nagle et al. ('531) discloses the metal based composite is heated to a temperature of about 1600° C without specifying the holding time at that temperature (col. 20, lines 8-12). However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. In re

Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the holding time at the heating temperature is a result-effective variable, because it would directly affect the precipitation of the component as disclosed by Nagle et al. ('531) (col. 10, lines 3-17). See MPEP 2144.05 II. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the holding time at the heating temperature as disclosed by Nagle et al. ('531) in order to achieve desired precipitation of the component in the metal based composite.

With respect to claim 29, Nagle et al. ('531) does not disclose the size of the component as claimed. However it has been well held where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical process, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977), MPEP 2112.01 [R-3] I. In the instant case, the claimed and Nagle et al. ('531)'s metal based composites are identical or substantially identical in structure or composition and are produced by identical or substantially identical processes. A prima facie case of obviousness is established. The same size of the component would be expected in the metal based composite of Nagle et al. ('531) as in the claimed metal based composite.

With respect to claims 34 and 42, Nagle et al. ('531) discloses that the volume fraction of metal component of the metal based composite is 10-95% (col. 9, lines 40-42), which overlaps the claimed ranges in the instant claims 34 and 42. A prima facie case of obviousness exists. See MPEP 2144.05 I.

With respect to claims 35-37, Nagle et al. ('531) discloses that the component of the metal based composite comprises metal borides, carbides, oxides, nitrides and silicides and that the preferred metal constituents of the component include metals of Group IVB, VB and VIB of the Periodic Table (col. 8, lines 5-10), which read on the claimed features of the instant claims 35-37.

With respect to claims 38-40, Nagle et al. ('531) discloses that the metal based composite produced may be crushed, ground, milled etc. to decrease the geometric size (col. 15, lines 11-14). Nagle et al. ('531) further discloses that in order to minimize the surface contamination of the composite, such as the formation of oxide coatings, it may be desirable to perform some steps in a controlled environment, for example, in a vacuum or under an atmosphere of an inert gas (col. 14, lines 6-10), which reads on the claimed features on the instant claim 39. Nagle et al. ('531) further discloses that the powder is mixed with a dissolution medium (col. 22, lines 1-5), which reads on the claimed features of the instant claims 40.

With respect to claims 43 and 44, Nagle et al. ('531) discloses that titanium oxide is treated at a high temperature with nitrogen in a reducing atmosphere to reduce the oxygen content and to form titanium nitride (col. 3, lines 32-35), which reads on the claimed features of the instant claims 43 and 44.

Conclusion

4. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose

Application/Control Number:
10/522,054
Art Unit: 1793

Page 6

telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WZ

1/7/2008


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700